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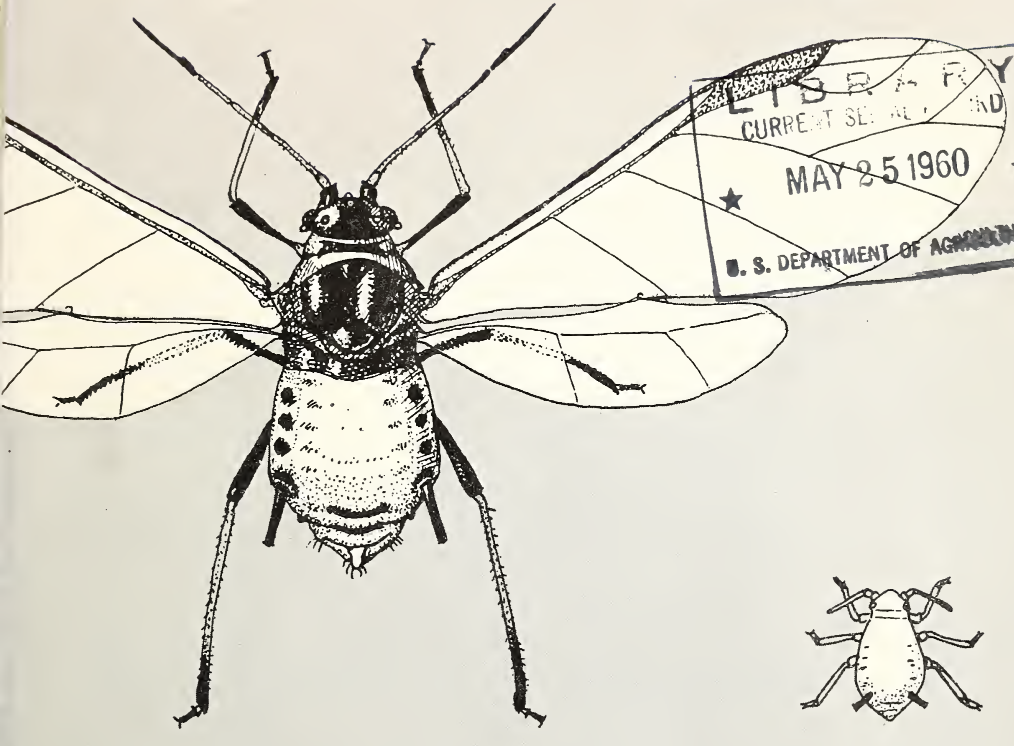
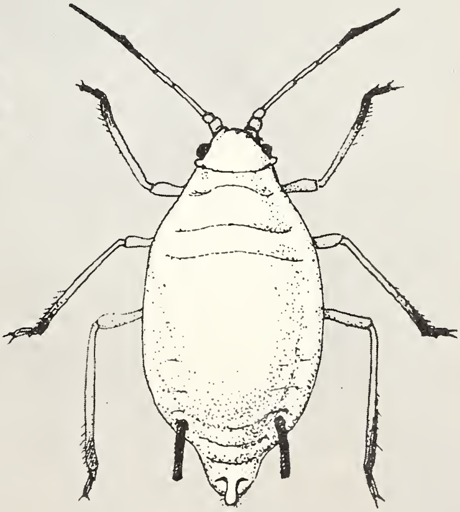


THE COTTON APHID:

How To Control It



U.S. DEPARTMENT OF AGRICULTURE

THE COTTON APHID:

How To Control It

The cotton aphid,[1] also called the cotton louse, occurs wherever cotton is grown. It attacks many plants in addition to cotton, and is sometimes called the melon aphid because it is a serious melon pest.

The adult cotton aphid is a soft-bodied, sucking insect that ranges in color from light yellow to dark green or almost black.

In the spring, on the tender, growing leaves and terminal buds of cotton, it is dark green, and about 1/14 inch long. Later in the summer, it usually is found on the undersides of mature leaves, and is light yellow and much smaller. In the fall, when plants often put on new terminal growth, the aphids are dark green to almost black, and are the same size as the spring aphids.

DAMAGE

This insect damages cotton by sucking juices from the plants. This reduces both yield and quality, and often causes severe losses to growers.

When heavy infestations occur on seedling cotton, the leaves curl or crinkle; plants become stunted, and may die. This often happens in early spring, before natural enemies of the aphid become active.

When heavy infestations occur during the main fruiting period (from early bloom to full bloom), the older leaves turn yellow and shed; this causes squares and small

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[1] *Aphis gossypii.*

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bolls to shed. Severe infestations during this period can cause defoliation and loss of the crop.

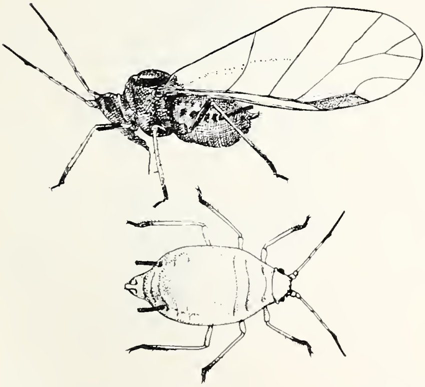
Heavy infestations in late season make the leaves shed, causing premature opening of bolls and immature development of fiber.

Also, honeydew secretions from the aphids drop on the fiber, making it sticky. Often, a fungus develops in the honeydew deposits, causing the plants to appear black or sooty. Fiber picked from such plants is stained, sticky, and of low quality; seeds are low in viability and light in weight.

DEVELOPMENT

The cotton aphid multiplies very rapidly under favorable conditions. Enormous populations may build up in a short time. New generations may occur every 5 days during summer months. Reproduction is slower and the life span longer during cold weather.

Only female cotton aphids occur in the Cotton Belt; they give birth to living young. Reproduction is continuous, and there are no distinct generations.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Winged and wingless cotton aphids.

These insects may spend part of the winter as winged adults, hibernating in field debris or in cracks in the soil. When warm periods occur, they fly to weed hosts on which they feed and continue to reproduce.

In the spring, winged adults develop on the weed hosts. They fly to cotton and melon plants, where they give birth to living young that develop into wingless females. Winged forms are produced on any host when crowding occurs or when food becomes scarce.

Males and females occur in the northern States, where they feed on melons, cucumbers, and many other plants, both wild and cultivated. Females lay eggs that survive the winter and hatch in the spring.

CAUSES OF APHID INCREASE

The cotton aphid often is controlled by its natural enemies. It seldom increases to damaging numbers unless its natural enemies are killed or retarded.

Weather

When heavy infestations occur on seedling cotton in early spring, the cool weather prevents natural enemies from becoming active and numerous enough to control the aphids.

When warm weather arrives, the natural enemies, if left undisturbed, always will increase sufficiently to bring the aphids under control. However, severe damage may occur before natural enemies take over.

BN–9111–X

Aphids on underside of cotton leaf.

Insecticides

The principal cause of aphid increase is the use of insecticides to control other cotton pests such as the boll weevil and the bollworm.

Nearly all insecticides used for this purpose kill the natural enemies of the cotton aphid. Some of these insecticides are not effective against the aphid itself. So, when natural enemies are killed off, the aphid population increases. Then, if not controlled, the aphids may do more damage than the insects that were being controlled in the first place.

Calcium arsenate and DDT are two insecticides that often are responsible for heavy aphid infestations. If you use one of these—either alone or combined with other insecticides—watch your fields closely for rapid aphid increase.

Most other insecticides commonly used to fight other insects on cotton—such as aldrin, BHC, endrin, dieldrin, heptachlor, Sevin, Strobane, and toxaphene—slow down aphid activity. They do not control heavy infestations, but they usually keep such infestations from occurring. However, when DDT is added to any one of these, as it often is to all except Sevin, the aphid population is likely to increase rapidly.

If you are following a scheduled program to control other insects with any of the organic phosphorus compounds—Guthion, malathion, methyl parathion, or parathion—the aphids are not likely to increase. This is true even if DDT has been added. However, a rapid aphid increase is likely to occur if your program is discontinued or interrupted.

CONTROL

Natural Control

Probably no other cotton pest has as many natural enemies as the cotton aphid. Most important are lady beetles. Both larvae and adults of these insects eat large numbers of aphids.

Other predatory insect enemies are larvae of the syrphid fly and the aphis lion.

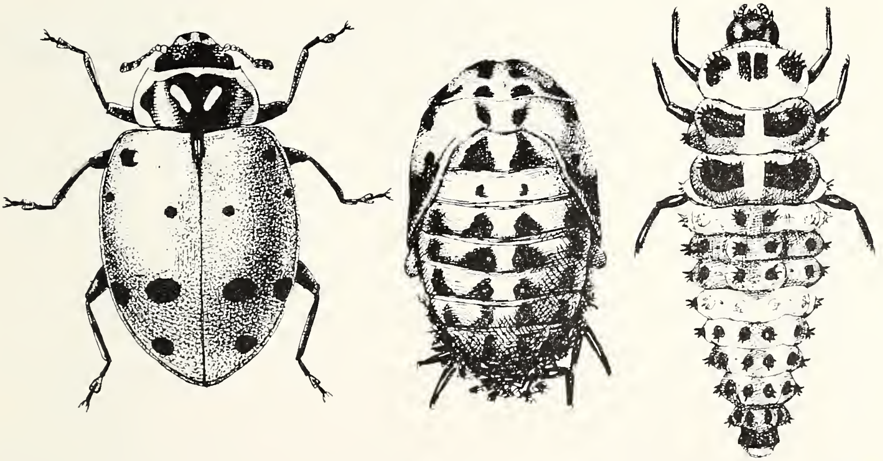
The most important parasitic enemy is a tiny wasplike insect. Females lay their eggs inside the aphids. The eggs hatch into larvae that devour the insides of the aphids' bodies.

Heavy rains help control cotton aphids by washing many of them from the plants.

Control With Insecticide

If a damaging aphid infestation occurs, and you need to control the insects quickly, apply one of the insecticides listed in the following tables. Use the smaller rates of application early in the season, and increase these as the season advances and the plants grow larger.

Add the concentrate to water in the spray tank. The amount of water is determined by the total amount of spray to be distributed.



Adult, pupa, and larva of lady beetle—enemy of aphids.

For example: If the sprayer is adjusted to apply 2 gallons of spray per acre in the early season, and you are using methyl parathion, add 1 pint of methyl parathion to 1 gallon and 7 pints of water for each acre to be treated.

Dusts and sprays are equally effective when properly applied.

● Do not apply dusts when wind velocity exceeds 5 miles an hour.

● Do not apply sprays by ground machines when wind velocity exceeds 15 miles an hour, or by aircraft when it exceeds 8 miles an hour.

● Before you prepare a spray, determine the amount of spray your equipment dispenses per acre at a given speed. Add water to the specified amount of concentrate to give the required per-acre dosage.

TABLE 1.—*Dusts, strengths, and rates of application*

Insecticide	Percent of active ingredient [1]	Per-acre rate of application
		Pounds
Parathion	1	10 to 25.
Methyl parathion	2. 5	10 to 20.
Malathion	10	10 to 20.
Trithion	3	10 to 30.
Ethion	4	15 to 25.

[1] These are the usual commercial formulations. If you buy an insecticide of a strength different from that stated in the table, use proportionately more or less of it.

TABLE 2.—*Sprays, strengths, and rates of application*

Insecticide	Strength [1]		Per-acre rate of application	
	Pounds of active ingredient in each gallon of concentrate	Percent of active ingredient	Concentrate [2]	Powder [2]
Purchased as emulsifiable concentrate:			*Pints*	*Pounds*
Demeton	2		½ to 1½	
Parathion	2		½ to 1	
Methyl parathion	2		1 to 2	
Malathion	5		1½ to 3	
Diazinon	2		1	
Trithion	4		½ to 2	
Ethion	4		1 to 2	
Purchased as soluble powder:				
Dipterex		50		½ to 2.

[1] These are the usual commercial formulations. If you buy an insecticide of a strength different from that stated in the table, use proportionately more or less of it.
[2] Purchased product to be mixed with water to form a spray.

BN–9110–X

Aphids, many parasitized, on undersides of seedling cotton leaves.

PRECAUTIONS

Insecticides listed in the tables are poisonous to man and animals. Follow directions and heed all precautions on container labels.

If you get insecticide on your skin or clothing, remove clothing and bathe with soap and water. As soon as you have finished using insecticide, bathe and change clothing.

Do not open containers in closed rooms. Do not leave metal containers of emulsifiable concentrates in the sun.

Empty containers are particularly hazardous. Empty bags should be burned *in the open*, or buried. Liquid containers should be crushed and buried.

Do not apply insecticides where they can drift onto pastures being grazed by livestock. Dusts are particularly dangerous in this respect.

Protect food and feed crops from the drift of insecticides being applied for cotton aphid control.

Avoid killing honey bees and other pollinating insects; make insecticide applications, if possible, during hours when bees are not visiting the plants. Take precaution against drift of insecticides into bee yards and adjacent crops in bloom. Notify beekeepers at least 48 hours before dusting or spraying, so that measures can be taken to protect the bees.

To protect fish and wildlife, be careful not to contaminate streams, lakes, or ponds with insecticides. Do not clean spraying equipment, or empty excess spray material, near such water.

The Extension Service in each cotton-producing State issues an annual guide for controlling cotton insects. You can get a copy at your county agricultural agent's office. If you are in doubt about the kind of cotton insect control program to follow, consult your county agent.

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